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Appendix	**Study**	**Key Conclusions/Findings**
Appendix A	Compliance with Ocean Plan Amendments	Proposed CDP operations are in compliance with all applicable provisions of the 2015 Ocean Plan, including requirements governing receiving water salinity; use of best available site, design, technology and mitigation; and consideration of preferred technologies. Subsurface intake alternatives were determined to be infeasible. The multiport diffuser is not the best technology measure feasible to minimize the intake and mortality of all forms of marine life. See Appendix JJ for errata to this Appendix A.
Appendix B	Intake Discharge Feasibility Report	Feasibility of four combinations of intake and discharge technologies as well as the Ocean Plan preferred technology requirements in developing an intake and discharge plan that provides the best combination of the best available site, design, technology, and mitigation feasible to minimize the intake and mortality of all forms of marine life. See Appendix II for the feasibility assessment of six additional combinations of intake and discharge technologies.
Appendix C	Hydrodynamic Discharge Study	The existing discharge structure provides for significant additional dilution through a range of hydrodynamic conditions. Actual initial dilutions are projected to be in excess of the dilution credits assigned within Order No. R9-2006-0065. The hydrodynamic discharge modeling report contained in this Appendix C has been revised in response to comments received from the Regional Water Board. See Appendix BB for the revised hydrodynamic discharge modeling report.
Appendix D	Coastal Process Effects of Reduced Intake	Reduced intake flows under permanent stand-alone operations will not create any significant adverse impacts on either the lagoon environment or local beaches, and will result in environmental benefits resulting from the reduced frequency of required lagoon maintenance dredging.
Appendix E	NPDES Order No. R9-2011-0028	The Order approves selection of the Otay River Floodplain wetlands restoration site for mitigating entrainment and impingement effects that may be caused by operation of the CDP.
Appendix F	Water Circulation in Agua Hedionda Lagoon	The location of the fish return system takes into account lagoon mixing that occurs as a result of tidal actions and other hydrodynamic drivers.
Appendix G	Acute Toxicity Study	The proposed salinity discharge standard of 42 ppt within the effluent pond will ensure that the CDP discharge will comply with Ocean Plan acute toxicity standards.
Appendix H	Chronic Toxicity Study	The proposed salinity discharge standard of 42 ppt within the effluent pond will ensure that the CDP discharge will comply with Ocean Plan chronic toxicity standards.
Appendix I	Brine Dilution Salinity Tolerance	The proposed salinity discharge standard of 42 ppt within the effluent pond is consistent with Ocean Plan requirements to minimize osmotic shock and consistent with ensuring protection of marine species.
Appendix J	Fish-Friendly Pumping	The proposed fish-friendly flow augmentation pumps are consistent with the Ocean Plan requirements to minimize turbulence and shear stress on marine organisms.
Appendix K	Intake/Discharge Entrainment Analysis	Entrainment effect associated with the proposed CDP flow augmentation system are less than impacts that result from a multiport diffuser discharge.
Appendix L	CFD Modeling of Flow Augmentation System	Computational fluid dynamics (CFD) modeling using particle tracking was utilized to estimate exposure times of marine organisms in the CDP intake flow under permanent stand-alone conditions.

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Appendix	**Study**	**Key Conclusions/Findings**
Appendix M	Antidegradation Analysis	Proposed CDP production rates, discharge flows, and effluent pond salinities are in keeping with Tier I antidegradation requirements for the protection of beneficial uses and maintenance of existing high quality receiving water.
Appendix N	Life Cycle Cost Analysis	Life cycle costs for CDP facilities demonstrate the economic superiority of surface intake with flow augmentation and surface discharge as the preferred intake/discharge alternative. The life-cycle cost analysis contained in this Appendix N has been revised in response to comments received from the Regional Water Board. See Appendix OO for the life-cycle cost analysis.
Appendix O	NPDES Order No. R9-2009-0038	Order No. R9-2009-0038 makes certain findings pursuant to Water Code Section 13142.5(b), approves the March 27, 2009 Minimization Plan submitted by Poseidon, and modifies NPDES CA0109223 to acknowledge Minimization Plan approval and to establish performance standards for Minimization Plan implementation.
Appendix P	Flow, Entrainment, Impingement Minimization Plan	The Minimization Plan implements Water Code 13142.5(b) requirements and establishes the best available site, design, technology, and mitigation feasible to minimize CDP intake effects associated operations under co-located and temporary stand-alone conditions.
Appendix Q	Final EIR	CDP facilities and operations under co-located and temporary stand-alone conditions are in compliance with requirements of the California Environmental Quality Act (CEQA).
Appendix R	California Coastal Commission Approval of Marine Life Mitigation Plan	California Coastal Commission findings and habitat restoration requirements for mitigating against potential CDP entrainment and impingement effects.
Appendix S	Hydrogeologic Investigation SDG&E Encina Power Plant, Carlsbad, CA	Prior hydrogeologic assessment of EPS site has identified opportunities and limitations associated with developing onsite groundwater supplies.
Appendix T	Drought Proofing Through Desalting the SDG&E Approach	Prior SDG&E assessment has identified opportunities and limitations at the EPS site for developing power plant water supplies through desalination of pumped groundwater.
Appendix U	Huntington Beach Desalination Project, ISTAP Phase I & II Reports	An Independent Scientific Technical Advisory Panel evaluated alternatives for subsurface intakes for the Huntington Beach Desalination Project.
Appendix V	U.S. Fish and Wildlife Service MOU	The Memorandum of Understanding establishes responsibilities for Poseidon and U.S. Fish and Wild Life Service in restoring and enhancing habitat in the San Diego Bay National Wildlife Refuge.
Appendix W	SDCWA 2010 Urban Water Management Plan and 2013 Facilities Master Plan Update	The San Diego County Water Authority (SDCWA) plans identify the importance of seawater desalination in meeting projected regional water supply demands and enhancing regional water supply reliability.
Appendix X	Construction Cost Estimates for Intake/ Discharge Alternatives	Construction cost estimates for intake/discharge alternatives considered in developing a recommended intake and discharge plan that provides the best combination of best available site, design, technology, and mitigation feasible to minimize the intake and mortality of all forms of marine life.

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Appendix Y	Implementation Schedules for Intake/Discharge Alternatives	Permitting and construction schedules for intake/discharge alternatives considered in developing a recommended intake and discharge plan that provides the best combination of the best available site, design, technology, and mitigation feasible to minimize the intake and mortality of all forms of marine life.
Appendix Z	Proposed Monitoring and Reporting Plan	The proposed CDP monitoring and reporting plan incorporates enhanced receiving water sediment, benthic, and water column monitoring in order to comply with monitoring provisions established within Section III.M.4 of the 2015 Ocean Plan amendments.
Appendix AA	California Coastal Commission Approval of CDP	California Coastal Commission revised findings to conditionally approve Carlsbad Desalination Project CDP #E-06-013, August 5, 2008.
Appendix BB	Revised Hydrodynamic Discharge Modeling Report	The hydrodynamic discharge modeling report contained in Appendix C was revised in response to comments received from the Regional Water Board. The mixing conditions modeled in the study were modified to reflect quiescent ocean conditions per the definition of Initial Dilution in the Ocean Plan.
Appendix CC	Encina Wastewater Authority Response to Request for Information regarding the Encina Ocean Outfall as a Brine Discharge Alternative for the Carlsbad Desalination Plant	The San Diego Regional Water Board Staff requested that Poseidon consult the Encina Wastewater Authority about the possibility of diverting some of the effluent from the CDP to the Encina Ocean Outfall. The Encina Wastewater Authority's response addresses some of the criteria necessary for assessing the feasibility of diverting some of the brine discharge from the CDP to the Encina Ocean Outfall for disposal.
Appendix DD	Analysis of Potential for CDP Discharge to Cause Hypoxic Conditions	Technical memorandum describing why the project is not expected to cause hypoxic conditions outside the BMZ.
Appendix EE	Comparison of Fish Return Options	Technical memorandum assessing the feasibility of fish return system options in Agua Hedionda Lagoon and the existing discharge pond.
Appendix FF	Fish Return System Cleaning Methods	Technical memorandum describing proposed fish return cleaning methods.
Appendix GG	Larval Fish Residence Time in Agua Hedionda Lagoon	Technical memorandum assessing the residence time of larval fish in Agua Hedionda Lagoon.
Appendix HH	Entrapment Evaluation	Technical memorandum assessing the potential for entrapment of fish and organisms in the proposed intake/discharge modifications.
Appendix II	Addendum to Intake Discharge Feasibility Report	Addendum to Appendix B. Collectively, these appendices assess the feasibility of 10 combinations of intake and discharge technologies as well as the Ocean Plan preferred technology requirements in developing an intake and discharge plan that provides the best combination of the best available site, design, technology, and mitigation feasible to minimize the intake and mortality of all forms of marine life. This Appendix II includes the for all ten combinations of intake and discharge alternatives considered along with the detailed analysis of alternatives 5-10. See Appendix B for the detailed analysis of intake and discharge technologies 1-4.

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Appendix JJ	Appendix A Errata	Corrections to errors contained in Appendix A.
Appendix KK	Draft Final SEIR	Final Supplement to the Precise Development Plan and Desalination Plant Project Final Environmental Impact Report (EIR 03-05) evaluating the potential environmental effects resulting from the project as modified, which includes (1) seawater intake and discharge system improvements required to be constructed due to the decommissioning of the once-through cooling system of the EPS; and (2) desalination processing improvements that would increase production capacity of the CDP by approximately an annual average 5 million gallons per day (mgd).
Appendix LL	Draft Response to Comments	Response to Comments Supplement to the Precise Development Plan and Desalination Plant Project Final Environmental Impact Report (EIR 03-05).
Appendix MM	Draft Findings of Fact	Findings of Fact Supplement to the Precise Development Plan and Desalination Plant Project Final Environmental Impact Report (EIR 03-05)
Appendix NN	Draft Mitigation Monitoring and Reporting Program	Mitigation Monitoring and Reporting Program Supplement to the Precise Development Plan and Desalination Plant Project Final Environmental Impact Report (EIR 03-05)
Appendix OO	Revised Life Cycle Cost Analysis	Life cycle cost analysis for all ten combinations of intake and discharge alternatives considered for the CDP transition to stand-alone operations and Ocean Plan Compliance.
Appendix PP	Intake/Discharge Design Modifications	Summarizes the changes made to the design of the New Screening/Fish-friendly Pumping Structure since the September 4, 2015 submittal of the Amended ROWD.
Appendix QQ	Response to Questions Regarding CDP Discharge Modeling Reports	This appendix addresses the Water Boards' September 27, 2016 questions regarding the Revised Hydrodynamic Discharge Modeling included in Appendix BB.
Appendix RR	Feasibility Assessment of Alternative Brine Discharge to the Encina Ocean Outfall	Analysis of the Encina Ocean Outfall brine dilution potential and an assessment of the facilities required to convey the CDP discharge to the Encina Ocean Outfall for blending with the discharge from the Encina Water Pollution Control Facility.
Appendix SS	Feasibility Assessment of Wedgewire Screen (WWS) Intake in Agua Hedionda Lagoon	During the September 27, 2016 meeting with State and Regional Water Board staff, staff requested a more detailed analysis of the WWS intake in the Lagoon. The technical aspects and potential feasibility of two WWS technologies in this lagoon are evaluated in this Appendix SS.
Appendix TT	Fish Return System Discharge Location Alternatives Analysis	During the September 27, 2016 meeting with State and Regional Water Board staff, staff requested additional information that can be used in their effort to reach a determination on the best location for the fish return system. This Appendix TT provides a comparison of the lagoon and discharge pond fish return systems, and where possible, quantifies the impacts of each alternative fish return discharge location.
Appendix UU	Brine Mixing Zone Habitat Assessment (Revised Jan 18, 2017)	This appendix provides an assessment of existing habitat value in the BMZ and proposes a mitigation ratio based on the productivity of the existing BMZ habitat as compared to that of the proposed restoration project.

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Appendix VV	Establishing the Location of the Zone of Initial Dilution for Stand-Alone Operation	Supporting information, and rationale for Discharger's recommendation that the ZID should remain at the current location 1,000 feet from the discharge.
Appendix WW	Brine Discharge Mortality Calculations	Depending on the discharge method employed, mortality resulting from operational impacts can be comprised of the following components: • mortality associated with elevated salinity in the brine mixing zone (BMZ); and • mortality associated with shearing stress at the point of discharge; or • mortality associated with intake-related entrainment– relevant for a flow augmentation approach This appendix describes the three components of the brine discharge mortality calculation and the methods used to estimate the mortality.
Appendix XX	Current and 2065 Area BMZ and Wetlands Restoration Project	This appendix provides a calculation of the soft bottom and hard bottom area within the BMZ as it exists today and expected conditions in the year 2065 and the current and 2065 area of the proposed Wetlands Restoration Project intertidal and subtidal alternatives.
Appendix YY	Marine Life Mortality Comparison between the Proposed Screening Location and the Lagoon Screen Locations	This appendix provides a compares the marine life mortality expected with the proposed intake screening design versus a design with the screens located at the Lagoon shoreline.
Appendix ZZ	Marine Life Mortality Report and Mitigation Calculation	Ocean Plan Amendment requires that the owner of a desalination facility submit a report to the Regional Water Board estimating the marine life mortality resulting from the construction and operation of the facility after implementation of the required site, design, and technology measures and mitigate for the mortality of all forms of marine life determined in the report. This appendix is responsive to this requirement.
Appendix AAA	Fish Return Discharge Antidegradation Analysis	The proposed fish return discharge to Agua Hedionda Lagoon represents a new discharge point. This appendix assesses water quality effects of the proposed fish return discharge and assesses compliance of the proposed fish return discharge with state and federal antidegredation regulations.
Appendix BBB	Evaluation of Intake Alternatives 1, 15, 16, 17, 18, 19, and 20.	This appendix assess the feasibility of various enhancements to the Discharger's proposed intake and discharge Alternative 1 that are intended to further reduce the intake and mortality of all forms of marine life associated with Alternative 1.
Appendix CCC	Appendix CCC Evaluation of Alternatives 1, 11-14	The evaluation of the costs and benefits of alternatives 11-14 compared to that of Alternative 1 was presented at the January 31, 2017 Carlsbad Permit Renewal Team meeting. This evaluation was based on cost and marine life mortality estimates for the baseline Alternative 1 that were prepared in 2016. Whereas, the evaluation of costs and benefits of alternatives 15-20 presented at the March 28, 2017 Carlsbad Permit Renewal Team meeting (Appendix BBB) was based on cost and marine life mortality estimates for Alternative 1 that were updated in April 2017. This Appendix CCC provides an updated evaluation of costs and benefits of alternatives 11-14 compared to

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		Alternative 1 using the updated April 2017 cost and marine life mortality estimate for Alternative 1. This update ensures that feasibility assessment of alternatives 11-14 and is directly comparable to the feasibility assessment of alternatives 15-20.